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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,516	02/19/2002	Yoshihisa Yonezawa	YONE3009/EM	3425
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BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314			DONG, DALEI	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N . 10/076,516	Applicant(s) YONEZAWA ET AL.	
	Examiner Dalei Dong	Art Unit 2879	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2004.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
 4a) Of the above claim(s) 18-24 is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-17 and 25-33 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 19 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. Claims 1-6, 8-17 and 25, 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,811,920 to Wada in view of U.S. Patent No. 4,982,134 to Aono.

Regarding to claims 1-6, 8-12, 14-17, 25 and 28-29, Wada discloses in Figure 1, “reference numeral 1 represents a rectangular anode substrate 1 forming a portion of the envelope. Anode conductors and wire conductors (not shown), connected to the anode conductors, are formed on the anode substrate 1. Moreover, a fluorescent layer is applied to the upper surface of the anode conductor so that an anode serving as a light-emission display portion is formed. A control electrode (not shown) is formed on the anode” (column 3, lines 12-20).

Wada also discloses in Figure 1, “a plurality of filament-shape cathodes 2 are stretched to run parallel to one another at positions above the control electrodes of the anode substrate 1. Each of the cathodes 2 is stretched in the lengthwise direction of the rectangular anode substrate 1. The two ends of each of the cathodes 2 are secured to the two lengthwise directional ends of the anode substrate 1 by stretching members. The stretching member includes a support member 3 for securing an end of the cathode 2 and

an anchor member for elastically holding the other end of the cathode 2 so as to apply a tension to the cathode 2” (column 3, lines 21-32).

Wada further discloses in Figure 1, “two cathode attaching plates 4a and 4b are disposed above the end of the rectangular anode substrate 1. Each of the cathode attaching plates 4a and 4b is a plate elongated in a direction (that is, the lengthwise direction of the anode substrate 1) perpendicular to the lengthwise direction of the cathodes 2, the cathode attaching plates 4a and 4b being disposed apart from each other at a predetermined interval in the lengthwise direction of the cathodes 2. The cathode attaching plates 4a and 4b are made of 426-alloy having a thermal expansion coefficient approximating that of glass” (column 3, lines 33-43).

Wada furthermore discloses in Figures 1 and 2, “a first support member 3a, which is a first stretching member, is secured to the first cathode-attaching-plate 4a located at an inner position with respect to the lengthwise direction of the cathodes 2. The first support member 3a has a base portion 11a which is secured to the first cathode-attaching-plate 4a. A substantially L-shape connection portion 13a is stood erect from the base portion 11a. A securing portion 12a is formed at the leading end of the connection portion 13a. An end of the cathode 2a is, by welding or the like, secured to the securing portion 12a. In this embodiment, the first support member 3a has the common base portion 11a, two connection portions 13a and two securing portions 12a so as to stretch two cathodes 2a” (column 3, line 65 to column 4, line 10).

Wada finally discloses in Figures 1 and 2, “a second support member 3b, which is a second stretching member, is secured to the second cathode-attaching-plate 4b located

at an outer position with respect to the lengthwise direction of the cathodes 2. The second support member 3b has a base portion 11b which is secured to the second cathode-attaching-plate 4b. A substantially L-shape connection portion 13b is stood erect from the base portion 11b. A securing portion 12b is formed at the leading end of the connection portion 13b. An end of the cathode 2b is, by welding or the like, secured to the securing portion 12b. In this embodiment, the second support member 3b has the common base portion 11b, four connection portions 13b and four securing portions 12b so as to stretch four cathodes 2a" (column 4, lines 11-23).

However, Wada does not disclose at least one metal film and at least one additional member is made of metal material. Aono teaches in Figure 3, "an image display device according to a first embodiment of the present invention is shown. In the drawings, reference number 11 designates a conductive wire cathode coated with barium oxide or another material having a thermionic emissions capability; 12a and 12b are insulated support frames positioned on both sides of back electrode 15 and used to support and clamp both ends of wire cathodes 11; 13 is the control electrode used to control the electron beam emitted from the wire cathodes 11 to form the defined image; 14 is the fluorescent material which emits light and displays an image when the electron beam which has passed through the control electrode 13 collides into the fluorescent material 14; 15 is the back electrode, which is installed so that thermions can be easily emitted from the wire cathodes 11; 16a and 16b are the housing; 17a and 17b are the rod-shaped insulated members which determine the height of the wire cathodes 11; and 18 is the spring which applies a load and tension to the wire cathodes 11. For example,

insulated support frames 12a and 12b and rod-shaped insulated members 17a and 17b are made of ceramics, back electrode 15, springs 18 and bottom portion 16b of the housing are made of metal, and cover portion 16a of the housing is made of glass” (column 4, lines 9-33).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have construct the supporting member of Wade with metal material of Aono in order to improve the deflecting and focusing electrodes structures and eliminate uneven brightness problems that cause image defects.

Regarding to claim 13, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Regarding to claim 30-33, Wada in view of Aono discloses the claimed invention except for the particular well known metal alloys. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilize the old and well known metal alloys, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice. *In re Leshin*, 125 UPSQ 416.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,811,920 to Wada in view of U.S. Patent No. 4,982,134 to Aono in further view of U.S. Patent No. 5,834,892 to Kikuchi.

Regarding to claim 7, Wada in view of Aono discloses an electron tube comprising at least one metal film formed on a base; at least one linear member provided above the base and divided into a body and a fixed portion for fixedly attaching the body to said at least one metal film, and at least one additional member, formed on the fixed portion, for connecting said at least one linear member to said at least one metal film, wherein said at least one additional member is welded to a portion of said at least one metal film, a bottom of the portion of said at least one metal film being in direct contact with the base.

However, neither Wada nor Aono discloses at least one linear member having a first and second metallic member, and the second metallic member of the grid is a said at least one additional member. Kikuchi teaches in Figure 2, "the cathode 10, as shown in FIG. 2, has one end 10a and the other end 10b fixed onto the anchors 11A and 11B, respectively. The middle point 10c along the long axis is fixed, for example by welding, to the support 12. For the cathode 10, the distances between one end 10a and the middle point 10c, and between the other end 10b and the middle point 10c are each determined to be 100 mm or less" (column 4, lines 40-47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have construct the supporting member and additional member of Wade with metal material of Aono and second metallic member of Kikuchi in order to

improve the deflecting and focusing electrodes structures and eliminate uneven brightness problems that cause image defects while reducing the cost of manufacturing the electron tube.

4. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,811,920 to Wada in view of U.S. Patent No. 4,982,134 to Aono in further view of U.S. Patent No. 5,621,284 to Shichao.

Regarding to claims 26 and 27, Wada in view of Aono discloses an electron tube comprising at least one metal film formed on a base; at least one linear member provided above the base and divided into a body and a fixed portion for fixedly attaching the body to said at least one metal film, and at least one additional member, formed on the fixed portion, for connecting said at least one linear member to said at least one metal film, wherein said at least one additional member is welded to a portion of said at least one metal film, a bottom of the portion of said at least one metal film being in direct contact with the base.

However, neither Wada nor Aono discloses the at least one linear member has a tension force applying portion having a coiled shape. Shichao teaches in Figure 2, "The cathode may comprise a number of substantially parallel filaments where each filament emits electrons for one column of pixels such as shown in FIG. 1a. Each filament is connected at two ends to the printed circuit board by means of springs 204 and leads 205. The core 202 of the cathode is usually made of a very fine gauge wire and springs that are available commercially are typically much thicker and difficult to connect to the core

202. Furthermore, conventional springs typically have low resistance and will therefore be heated to a low temperature compared to core 202. The temperature differential between such spring and the end portion of core 202 will cause such end portion of the core to be at the lower temperature, thereby reducing the effectiveness of this portion of the filament in emitting electrons. According to the invention, spring 204 is formed from a continuation of core 202 by simply bending the two ends of core 202 into springs. These springs would permit the cathode to expand or contract without sagging and the tension maintained by these springs in the filament would reduce the amplitude of vibrations. By bending the end portions of core 202 into springs, it is unnecessary to connect the core to a separate spring and also reduces dark areas of the display caused by cold terminal effects discussed above. Springs 205 also serve as the support frame and leads followed onto board 206 and connected through connectors 207 to the system circuit” (column 7, lines 35-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have construct the supporting member and at least one linear member of Wade with metal material of Aono and coiled spring tension member of Shichao in order to improve the deflecting and focusing electrodes structures and eliminate uneven brightness problems that cause image defects while reducing the cost of manufacturing the electron tube.

Response to Arguments

5. Applicant's arguments filed June 1, 2004 have been fully considered but they are not persuasive.

In response to Applicant's argument that Wada reference fails to teach or suggest a bottom of the portion of the at least one metal film being in direct contact with the base; Examiner interprets the base portion 11a and L-shape connecting portion 13a as at least one metal film formed on a base or cathode attaching-plate 4a or 4b, wherein a bottom portion or base portion 11a of the at least one metal film is in direct contact with the base or cathode attaching-plate 4a or 4b. Thus, Examiner asserts that the prior art of record teaches the claimed invention and maintains the rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior art are cited to further show the state of the art of composition of an electron tube.

U.S. Patent No. 4,164,683 to Nakamura.

U.S. Patent No. 4,788,472 to Katakami.

U.S. Patent No. 4,812,716 to Miyama.

U.S. Patent No. 5,235,245 to Uchimura.

U.S. Patent No. 5,949,395 to Stevens.

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7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (571)272-2370. The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on (571)272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



D.D.

June 24, 2004



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PRIMARY EXAMINER